What is claimed is:

1. A method of transmitting time division multiplexed data from a satellite terminal to a satellite, said method comprising the steps of:

providing said satellite terminal with at least one command that allocates to said satellite terminal a number of timeslots within each of at least one frame for data transmission, said command identifying said number of allocated timeslots in a first order in accordance with a timeslot reordering scheme; and

converting said timeslots identified by said command to corresponding timeslot locations within each frame in a second order in accordance with said timeslot reordering scheme to distribute said allocated timeslots throughout each frame.

2. A method as claimed in claim 1, further comprising the step of selecting said timeslot ordering scheme to distribute data from respective satellite terminals to different timeslots throughout each frame.

3. A method as claimed in claim 1, wherein said converting step is performed by said satellite terminal.

4. A method as claimed in claim 1, wherein said providing step comprises the steps of:

receiving a request for bandwidth at said satellite from said satellite terminal;

processing said request to determine an allocation of timeslots within each frame for said satellite terminal to transmit said data;

generating said command to indicate said timeslots allocated to said satellite terminal in said first order in accordance with said timeslot reordering scheme; and

transmitting said command to said satellite terminal.

5. A bandwidth on demand apparatus in a communication system comprising:

a processor operable to generate commands that allocate a plurality of channels among terminals, said terminals being operable to process said commands and use said channels in accordance with said allocations;

a receiver for receiving bandwidth requests from said terminals requesting use of said channels for transmission of terminal traffic comprising at least one of audio, video and data; and

a transmitter for transmitting said commands to said terminals;

wherein said processor allocates each of said channels as one of a contention channel and a data channel, said contention channels allowing said terminals to transmit said bandwidth requests, said data channels allowing said terminals to transmit said terminal traffic, said processor dynamically changing said allocation of channels depending on an amount of bandwidth requests pending at any given time.

6. A bandwidth on demand apparatus as claimed in claim 5, further comprising a plurality of queues connected to said processor, wherein said processor writes to and reads from said queues, stores said bandwidth requests in said queues, and allocates said channels as data channels in accordance with said bandwidth requests stored in said queues.

7. A bandwidth on demand apparatus as claimed in claim 5, wherein said channels correspond to timeslots in frames, said processor being operable to allocate said timeslots in accordance with said bandwidth requests and a bandwidth allocation algorithm and to generate said commands accordingly, and said terminals being operable to process said commands and use said timeslots in accordance ~~therewith.~~

8. A bandwidth on demand apparatus as claimed in claim 5, wherein at least a selected minimum number of said plurality of channels are configured as said contention channels.

9. A bandwidth on demand apparatus as claimed in claim 5, wherein said processor is further operable to generate and transmit a signal via said transmitter to one of said terminals, to which selected ones of said channels have been allocated, indicating that a channel release request from said one terminal to release said selected channel allocations has been processed, said one terminal being provided with a timer and being programmable to wait until said timer expires before transmitting another one of said bandwidth requests.

10. A bandwidth on demand apparatus as claimed in claim 5, wherein one of said terminals transmits one of said bandwidth request via one of said contention channels, and transmits other bandwidth requests subsequent to receiving channel allocations in response to said one bandwidth request as inband messages via allocated data channels.

11. In a bandwidth on demand communication system, wherein channels correspond to timeslots in frames with some of said channels being designated for bandwidth requests comprising at least rate requests, said rate requests being a request for a selected number of said timeslots in each of said frames and each of said rate requests being characterized as one of high priority and low priority, and wherein said communication system includes terminals that are operable to transmit said bandwidth requests, a processing device for providing channel allocations comprising,

a first queue and a second queue, said processing device storing said high priority rate requests in said first queue and allocating a selected number of said timeslots in each of said frames to each of said high priority rate requests stored in

said first queue, and storing said low priority rate requests in said second queue and allocating a selected number of said timeslots in each of said frames to each of said low priority rate requests stored in said second queue, the sum of the number of said timeslots in each of said frames allocated to said rate requests stored in said first and second queues not exceeding a total number of timeslots in each of said frames, allocation of said timeslots to said rate requests stored in said second queue being preempted for at least one frame by allocation of said timeslots to said rate requests stored in said first queue for said at least one frame.

12. A processing device as claimed in claim 11, wherein said bandwidth requests further comprise volume requests, said volume requests corresponding to a request for a selected number of said timeslots to send a selected amount of terminal traffic, said terminal traffic comprising at least one of data, audio and video, and each of said rate requests being characterized as one of high priority and low priority, and wherein said processing device further comprises,

a third queue and a fourth queue, said processing device storing said high priority volume requests in said third queue and storing said low priority volume requests in said fourth queue, said volume requests being preempted for at least one frame by allocation of said timeslots to at least one of said rate requests stored in said first queue and said rate requests stored in said second queue.

13. A processing device as claimed in claim 12, wherein said volume requests stored in said fourth queue are preempted for at least one frame by allocation of said timeslots to at least one of said rate requests stored in said first queue, said rate requests stored in said second queue and said volume requests stored in said third queue.

14. A processing device as claimed in claim 12, wherein said processing device is programmable to allocate said timeslots in each of said frames to said volume requests stored in said third queue and stored in said fourth queue on a round-robin basis to allow said volume requests a substantially equal opportunity to be allocated bandwidth.

15. A processing device as claimed in claim 12, wherein said processing device is operable to assign said timeslots to as many of said volume requests stored in said third queue and said fourth queue as possible in lieu of providing said terminals requesting said bandwidth all of said channels that are available at that time and to continue to store said volume requests in respective one of said third queue and said fourth queue until the requests said bandwidth has been allocated.

16. A method of transmitting channels in a bandwidth on demand communication system wherein channels correspond to timeslots in frames and the system comprises a number of uplink cells within which terminals transmit signals using at least one of said channels, said method comprising the steps of:

controlling the use of each of said channels by said terminals, said terminals being operable to transmit bandwidth requests to send terminal traffic comprising at least one of data, audio and video, said plurality of channels each being useful as one of a contention channel and a data channel, said contention channel allowing said terminals to transmit said bandwidth requests, said data channels allowing said terminals to transmit said terminal traffic, said channels being allocated in accordance with said bandwidth requests and transmitted to said terminals in a subsequent one of said frames, said terminals being operable to adjust power for transmission of said bandwidth requests and said terminal traffic using an initial power condition; and

transmitting said contention channels in adjacent and isolated said uplink cells as cofrequency channels to reduce interference of said contention channels ~~with said data channels.~~